

encouraged to look forward to a selection from Stokes's scientific correspondence, which cannot fail to be of the highest interest.

All readers will combine in congratulating Prof. Larmor and the Cambridge Press on the success of this most acceptable volume. The portrait by Dickens, of date 1874, is admirable; we trust that it may be supplemented later on by a likeness of a more recent date, recalling the aspect which is to many more familiar.

HORACE LAMB.

ARGENTINE LIVE STOCK.

Argentine Shows and Live Stock. By Prof. Robert Wallace. Pp. 154. (Edinburgh: Oliver and Boyd, 1904.) Price 3s. 6d. net.

THIS volume is the outcome of a six months' tour of agricultural investigation and inspection in Argentina. While professing primarily to be an account of the annual live stock show of the Rural Society held at Palermo, it includes also notes on other Argentine shows, as well as an interesting description of the chief breeds of cattle, horses, and sheep bred in that country.

The European breeds of cattle represented at the Palermo show were the shorthorn, the Hereford, and the Aberdeen-Angus. Of these, the shorthorn cattle were far the most in evidence. We are told that this breed owes its success to its unrivalled capacity for beef-production where the climate is genial and pasture abundant, and to the fact that it has proved more serviceable than other imported breeds for crossing with the Criollo or native cattle, and so improving their quality for purposes of fattening. Hereford and Aberdeen-Angus cattle are stated to thrive well amid comparatively unfavourable surroundings, and, although not bred to nearly the same extent as the shorthorns, occupy a definite place in the rural economy of the Republic. The Aberdeen-Angus breed has not gained general favour partly because, unlike the other two breeds mentioned, it does not "nick" well with the Criollo cattle.

The horses at the Palermo show included all the more prominent British breeds, the introduction of which has been accompanied by considerable success. It is instructive to note that the importation has in many cases resulted in improvement, apparently owing solely to change of soil and environment. This is especially the case with certain strains of Hackney blood, while among cattle a similar tendency has been noticed for the Hereford breed.

Reference is made to the native Criollo horses, the degenerate descendants, according to most writers, of Barbs and Arabs introduced by the Spaniards at a very early period of the European occupation. Genuine Criollos—only now found in outlying provinces—are characterised by their dun colour, by stripes on the legs and shoulders, and by a dark dorsal band. These Criollos are said to be hardy to a degree, to possess great power of endurance, and, moreover, they are difficult to handle. Doubtless natural selection has been at work eliminating the unfit, with the result that the survivors present all the traits that Darwin

and others associated with the ancestors of the common horse. That in the Criollos the mane in no way differs from the mane of Barbs and Arabs suggests that many centuries must have elapsed since horses acquired a long mane, from which it may be inferred that Prjevalsky's horse is not an escaped domestic horse.

It is worthy of note that so great is the vigour of the Criollos that crosses with but little of the native blood prove most useful, owing to their great stamina and endurance.

The section on horses is followed by one on the sheep bred in Argentina. The account includes some interesting information about the early history of the Pampa and Criollo sheep, besides containing suggestions for the improvement of the stock now existing in the country. The Pampa is stated to be derived from the Spanish long-wool, which was a hardy animal, and, like the Dorset Horns of England, in favourable circumstances bred twice a year. The Criollo sheep is a "degenerate offshoot of the Spanish Merino." The most numerous and best represented sheep at the present time are the Lincoln and its various crosses, though a good many other British breeds have been imported with varying degrees of success.

Chapters on dairying and on agricultural machinery follow the description of the live stock.

The book is of value for the interesting descriptions which it contains, and because it affords an idea of the altogether remarkable resources of Argentina for producing live stock. It is freely illustrated by photographs of prize animals taken at the show in Palermo.

OUR BOOK SHELF.

The Old Riddle and the Newest Answer. By John Gerard, S.J., F.L.S. Pp. vi+293. (London: Longmans, Green and Co., 1904.) Price 5s. net.

WE have derived much entertainment from Father Gerard's lively chapters. They constitute an ably constructed plea for agnosticism in science. Not Huxley himself was so rigid in demanding exact demonstration of the truth of every statement required to be believed, as is this latest critic of the doctrine of evolution.

Science does not consist purely of mathematical demonstration. Other methods and processes have a perfectly legitimate place in scientific thought. Even in pure logic a door is open to theory and hypothesis; nor are probability, analogy, or even conjecture excluded by those whose conception of the science and art of reasoning is of the widest and wisest kind. We have, of course, to refrain from treating an untested hypothesis, however likely to be true, as an immutable verity; but no one in his senses will fail to recognise that among the dicta of scientific writers there are many degrees of probability, ranging from the practically certain to the merely conjectural. Some of the conclusions of science are as certain as the nature of things will allow; but it is a mistake to attribute to those who lay stress on such certainty a claim of equal respect for every position that to scientific men appears probable.

All this is, of course, perfectly well known to Father Gerard; we can only say that in practice he appears to disregard it. His book is marked throughout by great charm of style and felicity of expression; its main defect is a too evident desire to "play to the gallery." The chapters which contain a root-and-

branch attack on the theory of genetic evolution are as brightly and easily written as the rest; their matter, however, will be entirely unconvincing to those who know the facts. The author has got up his case as a clever advocate might get up his address to a jury; but the cross-examination of witnesses would put a very different complexion on the whole business. Father Gerard seeks to prove too much. His plea amounts to an allegation in the name of science that a science of life is non-existent.

F. A. D.

Occurrence of Aluminium in Vegetable Products, &c.

By C. F. Langworthy, Ph.D., and P. T. Austen, Ph.D. Pp. v+168. (New York: John Wiley and Sons; London: Chapman and Hall, Ltd., 1904.) Price 8s. 6d. net.

AFTER a careful perusal of this book we have been unable to arrive at any conclusion as to why it was written. The authors presumably had some reason for compiling a bibliography of the analytical work done on aluminium and its occurrence in plants, animals, and waters, but they give no idea as to their object in their preface.

The book, as already stated, consists of a compilation of work dealing with the occurrence of aluminium in vegetable products, animal products, and in natural waters. In the preface it is stated that "no attempt has been made to comment on the value of individual analyses cited." Now by omitting to do this the book loses any value it might have had, because the references given are so extremely scanty. One or two examples taken at random will give an idea of the style of compilation, e.g. on p. 9 we find:—

"Coppola, M. (*Gaz. Chim. Ital.*, 10, p. 9: *Jour. Chem. Soc. London*, 37 (1880), p. 382), found 11.16 per cent. ash in *Stereocaulon vesuvianum*. Of this 1.13 per cent. was Al_2O_3 ."

Again, on p. 73:—

"Finckh, C. (*Neue. Jahrb. Pharm.*, 34, p. 13; *Chem. Centbl.*, 1870, p. 615; *Jahresb. Chem. Naumann*, 1870, p. 1382), notes traces of aluminium in Ochsenhausen mineral water from Bieberach, Germany."

Both these illuminating passages are taken from the middle of the respective pages. On p. 73 there are seven and a half such references, and on p. 9 eight.

The contents of the book are not arranged in any order, except that the authors' names are placed alphabetically. Consequently, if one looks up tea in the index in order to ascertain whether it contains aluminium, one is referred to p. 32; after a lot of hunting we find tea under the name of Schridl, P. (*Arch. Pharm.*, 1873, p. 375). . . . Again, if we wish to know the aluminium content of mushrooms, we are referred to p. 15, where we can find nothing about mushrooms, unless *Boletus edulis* is a mushroom; or is poke-weed the American name for mushroom?

In desperation we look up primrose, and are referred to p. 42, and at last we are satisfied; the root of the primrose contains 1.617 per cent., and the flower heads 1.145 per cent., of aluminium oxide.

Works of compilation are often of great value, but they can only be of value when the contents are systematically arranged. To arrange a dictionary such as this according to the names of the authors is absurd. The pitiable thing about the whole matter is that the authors must have wasted a great deal of valuable time, because a compilation of this kind is extremely tiresome and laborious.

Practical Chemistry. By P. A. E. Richards, F.I.C. Pp. viii+136. (London: Baillière, Tindall and Cox, 1904.) Price 3s. net.

So long as examinations in practical chemistry of the test-tube order are encouraged by examining bodies,

there will be a steady consumption of chemical cram books. The peculiarities of such books are that the student is never allowed to step outside the limits of his syllabus without due warning, and his weary brain is not perplexed with explanations. Like the cattle in the large tinned meat factories, he is driven along a narrow gangway in which he cannot turn round, until he is delivered into the hands of the slaughterer.

Fortunately the more intelligent examining bodies are beginning to realise that the analysis of simple salts does not furnish scientific pabulum of a very nourishing kind; so preparations of a few inorganic compounds and a little volumetric analysis have been added to the syllabus.

The present volume has been prepared to meet the special requirements of the syllabuses of the conjoint board and the preliminary scientific examination of the London University.

It is only necessary to state that the author has completed his task in a thoroughly business-like manner. A student who worked through the book conscientiously might with confidence defy the conjoint examiner to do his worst.

J. B. C.

Calculations used in Cane-Sugar Factories. By Irving H. Morse, B.S. Pp. viii+74. (New York: John Wiley and Sons; London: Chapman and Hall, Ltd., 1904.) Price 6s. 6d. net.

THIS collection of tables was primarily made for the use of the sugar chemists of Louisiana, but it is equally applicable to the operations of every manufacturer of cane-sugar. The work may be recommended to all who seek to use the laboratory as a control of the working of the sugar-house. In every well regulated factory the manager is dependent upon the chemist for information as to the amount of sucrose in the raw juice, the yield of sugar, the losses in manufacture, and whether or not all the available sugar is being extracted from the cane, and the efficiency and value of the laboratory largely depend upon the rapidity and accuracy with which this information can be furnished. The work is thoroughly practical, and is evidently the outcome of many years' experience of sugar testing.

LETTERS TO THE EDITOR.

[The Editor does not hold himself responsible for opinions expressed by his correspondents. Neither can he undertake to return, or to correspond with the writers of, rejected manuscripts intended for this or any other part of NATURE. No notice is taken of anonymous communications.]

Colours due to Intermittent Illumination.

MR. C. T. WHITMELL (*NATURE*, September 1, p. 424) describes a method of producing coloured patches by means of a rotating disc, furnished with a ring of holes. It will be found that the phenomenon can also be produced by intermittent reflection. In the year 1881 I described in *NATURE* (vol. xxiv. p. 140) a method whereby colour patches of great brilliancy, due to intermittent illumination, were easily produced by viewing sun-light reflected from the polished spokes of a cycle wheel. The relationship between the colour given and the velocity of rotation was clearly marked, and the effects can be easily reproduced by means of the simple apparatus described. In these experiments, a counter was attached to the axle of the rotating wheel, so that the rate of rotation could be accurately determined at the time of observation. The rotation of the cycle wheel was maintained by means of a motor the speed of which could be easily varied. In connection with the phenomenon of the change of colour due to intermittent illumination, several papers of much interest have been published since the year 1882 by Dr. G. Burch, F.R.S.

F. J. JERVIS-SMITH.

Trinity College, Oxford, September 13.